CHAPTER 7

CARTRIDGE ACTUATED CUTTER

Section 7-1. Description

7-1. GENERAL.

7-2. The Cartridge Actuated Cutter (NSN 1377-01-492-4305) (figure 7-1) is commercially known as the Passive Anti-Suffocation Device (PASD). It is a battery operated, cartridge actuated device used to provide a breathing air passage for an unconscious aircrewmember forced down over water while wearing an A/P22P-14(V) Chemical Protective Respirator Assembly.

7-3. APPLICATION.

7-4. The Cartridge Actuated Cutter is intended for use with the A/P22P-14(V)2 or (V)3 during operational contingency missions.

7-5. OPERATION.

7-6. The Cartridge Actuated Cutter is mounted on the mask inlet hose of the respirator. When properly installed, the Cartridge Actuated Cutter will open a one-half inch hole in the respirator's mask inlet hose above the water line after it enters and exits fresh or salt water. This will provide ambient air for breathing to the pilot even though the end of the hose may still be immersed. The device is fully automatic and does not require aircrewmember or aircraft input for activation. It is further capable of sustaining a dormant condition when exposed to all environmental stimuli except complete immersion in fresh or salt water. After immersion it will function only upon removal from the water. The Cartridge Actuated Cutter has a firing indicator device built into the clamp assembly that will display a red flag to indicate an expended unit. The red flag is visible to the aircrewmember while wearing the Cartridge Actuated Cutter. Table 7-1 provides leading design parameters.

7-7. The Cartridge Actuated Cutter has been classified as "Not Regulated" by the U.S. Department of Transportation, Classification of Explosives, in accordance with Section 173.56, Title 49, Code of Federal Regulations, (49 CFR). The United Nations Committee of Exports on Transportation of Dangerous Goods has assigned a U. N. Number of UN0000 to the Cartridge Actuated Cutter. This means there are no special handling, storage, shipping or marking procedures applicable to the limited quantity of explosives contained in this device. The device contains a 181-milligram charge and presents no significant hazard in the event of ignition or initiation during transport. A Material Safety Data Sheet is available for this device and should always accompany the Cartridge Actuated Cutter as a safety reference during handling, storage and shipping of the device.

Table 7-1. Leading Particulars

Overall Dimensions	
Length	2 7/16 inches
Width	1 7/16 inches
Height	2 1/2 inches
Weight	65 grams
Service Life	5 years
Operating Temperature	0 to 125 degrees Fahrenheit
Transportation	Per UN0000 Package Instruction 134

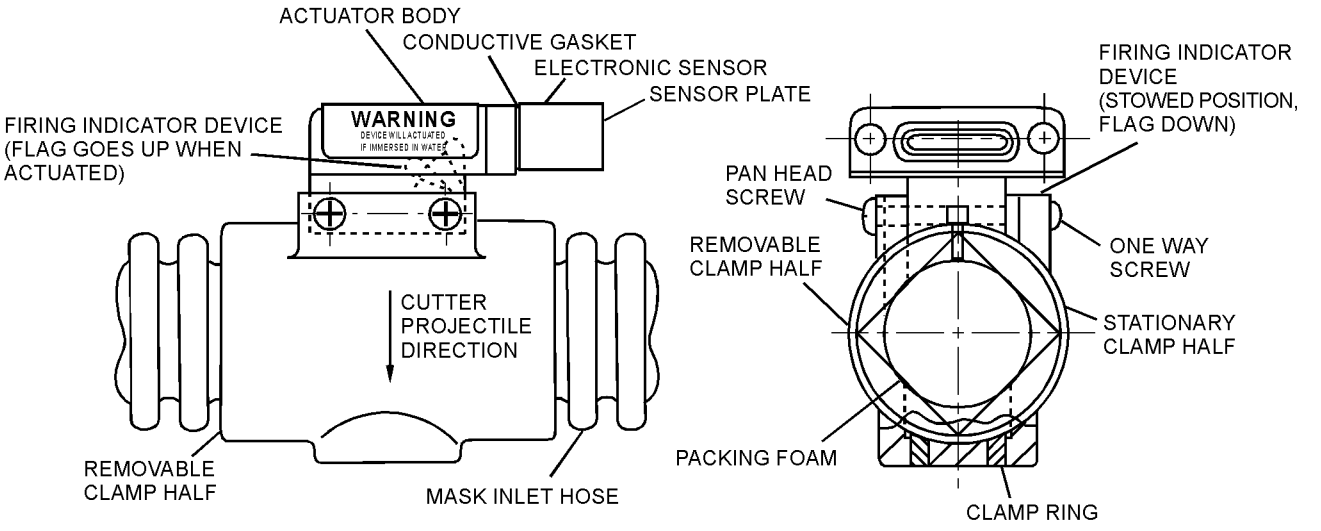

Figure 7-1. Cartridge Actuated Cutter

Section 7-2. Modifications

7-8. GENERAL.

7-9. There are no modifications to the Cartridge Actuated Cutter authorized at this time.

Section 7-3. Installation

7-10. GENERAL.

WARNING

The Cartridge Actuated Cutter is an electro-explosive device that employs a cutter to penetrate the Mask Inlet Hose. If the foam-packing insert is removed and the clamp is opened, the open clamp end, which contains the cutter, shall not be pointed towards personnel or equipment. The cutter is a projectile when clamp is open and in case of inadvertent firing, can inflict personal injury and/or equipment damage. The device will be assembled on the Mask Inlet Hose immediately after packing foam and clamp are removed.

Do not immerse the Cartridge Actuated Cutter in water, emergence from the water and exposure to air will activate the device.

CAUTION

Adhere to all maintenance requirements and safety precautions contained in applicable MIMs.

7-11. INSTALLATION PROCEDURE.

7-12. Installation of the Cartridge Actuated Cutter shall be performed as following:

1. Open and inspect the Respirator in accordance with the instructions contained in Chapter 4.

2. Select a clean, dry, flat, work surface for installation. Lay the Respirator flat with faceplate/mask facing up and the hoses towards the installer.

CAUTION

When removing the Cartridge Actuated Cutter from the container, do not remove the packaging foam located inside the hose clamp until just prior to installation.

3. Remove the Cartridge Actuated Cutter from the container. Place the device on the work surface and review figure 7-1 to identify and orient components of the Cutter.

4. Inspect the firing indicator device on the Cartridge Actuated Cutter to insure that the unit has not been activated. Orient the device as shown in figure 7-2. The red flag is contained in a slot below the serial number and behind the one-way screw on the left. The red flag should be in the down position or stowed within the confines of the slot. If the red flag is in the up position, as shown in figure 7-2, device has been actuated and cannot be installed. If the red flag is up, initiate a QDR and return the unit to:

NAWCAD
CBR Lab/Code 4.6.3.1/Bldg 2187/Suite 2240A
48110 Shaw Rd.
Patuxent River, MD 20670-1906.

5. Position the Cartridge Actuated Cutter on a flat surface with the warning label and pan head screws up, and the Actuator Body towards the installer. Remove the two pan head screws with a Phillips head screwdriver. Slide the removable clamp half away from the actuator body to disengage from the clamp ring. Remove the removable clamp half from the stationary clamp half. Discard the packaging foam, set the removable clamp half aside.

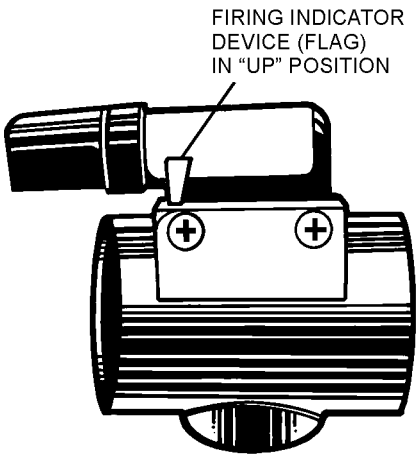

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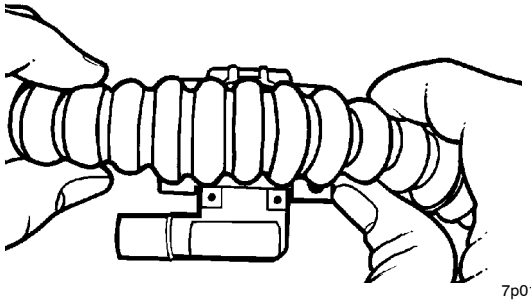
Figure 7-2. Firing Indicator Device In Up Position

WARNING

With the clamp half and shipping foam removed, the cutter can become a projectile if inadvertently actuated. The Cutter should always be pointed away from the installer and any other person in the area.

6. The Cartridge Actuated Cutter will be installed on the mask inlet hose. The mask inlet hose is the hose on the right or the larger of the two hoses. The Cartridge Actuated Cutter will cover five convolutes starting at the fourth convolute below the anti-suffocation disconnect (figure 7-3).

7. Place the stationary clamp half on right side of the mask inlet hose with actuator body on the right, and the electronic sensor towards the installer. Gently stretch the hose, and starting with fourth convolute below the anti-suffocation disconnect, place the hose into the clamp. Insure 5 hose convolutes are fitted into the matching indentations molded into the clamp.



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Step 7 - Para 7-12

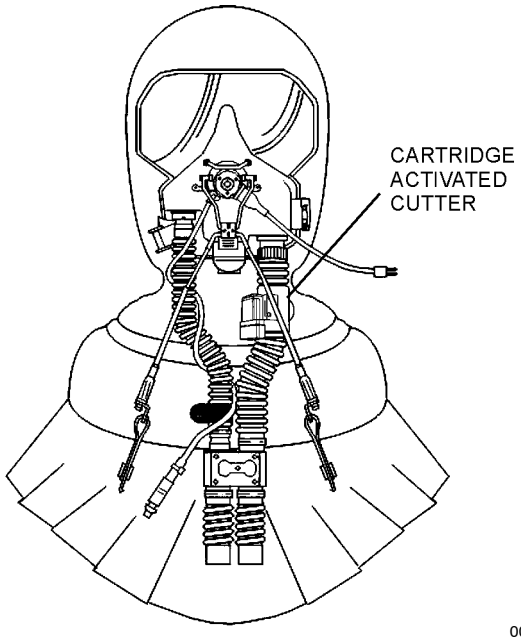

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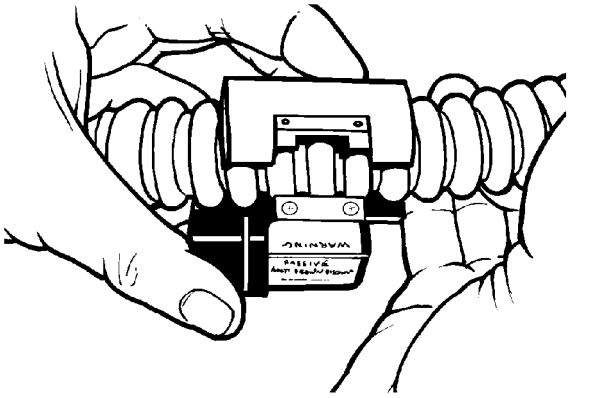
Figure 7-3. Respirator Assembly

8. Hold the hose stationary, keeping the 5 hose convolutes in place, rotate/move the stationary clamp half counterclockwise (to the left) so the actuator body is between 20 and 45 degrees to the left of the top center of the hose. Using the top center of the hose as twelve o'clock, the actuator body should be between the nine and eleven o'clock positions. Placing the actuator in this position will maximize the probability of the wearer viewing the firing device indicator (flag) in the event of an inadvertent actuation.

9. Attach the removable clamp half to the hose by lining it up with the two pegs on the clamp ring and rotating the clamp into the actuator body. Insure the 5 hose convolutes match the indentations molded in the removable clamp half. Re-install pan head screws and tighten sufficiently to hold the Cartridge Actuated Cutter in place, but loose enough to rotate the device if required.



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Step 9 - Para 7-12

10. With the Respirator laying flat on the table and the faceplate/mask facing up, examine the position of Cartridge Actuated Cutter in relation to the top of the hose. Looking from the end of the mask inlet hose, and using the top of the hose as twelve o'clock, the actuator body should be between the nine and eleven o'clock positions. Adjust/rotate the device as required and securely tighten pan head screws.

11. Prepare Respirator for storage in accordance with the instructions contained in paragraph 4-101.

Section 7-4. Maintenance

7-13. GENERAL.

7-14. Maintenance is limited to inspection and cleaning. The surface of the actuator body gasket and the sensor plate as shown in Figure 7-1 are conductive surfaces required for completing an electrical path to provide proper functioning of the Cartridge Actuated Cutter during immersion. These surfaces shall be kept clean at all times.

7-15. INSPECTION.

NOTE

Only Cartridge Actuated Cutters that are installed on the respirator assembly need to be inspected.

7-16. Inspection is limited to visual inspection. No functional checks for the Cartridge Actuated Cutter or its battery are required. The Cartridge Actuated Cutter shall be inspected at intervals coinciding with respirator assembly inspections stated in Chapter 4. Visually inspect the Cartridge Actuated Cutter. Cartridge Actuated Cutters with the following observations shall be returned to NAWCADPAX and replaced.

1. If the red firing indicator flag is in the up position, as shown in figure 7-2.

2. Cutter has reached its shelf life.

3. Physical damage such as cracks or dents.

4. Missing labels or screws.

7-17. CLEANING.

7-18. The surface of the actuator body gasket and the sensor plate may be cleaned using a dry cloth or non-metallic brush. Do not use metal tools, water, or solvents to clean surfaces. Cleaning of the sensor plate is not recommended because of possible grounding, which will result in actuation. During mask/hose cleaning (or decontamination) the Cartridge Actuated Cutter must be removed from the hose to prevent inadvertent actuation.

7-19. STORAGE.

7-20. The Cartridge Actuated Device is not an Electro-static Sensitive Device (ESD), but should be stored in an anti-static bag and in a dry environment at a temperature within the range of 40°F (5°C) to 90°F (32°C).

7-21. SHELF LIFE AND OPERATIONAL LIFE.

7-22. The maximum recommended shelf life and operational life of the Cartridge Actuated Cutter is five years.

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